LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES DIVISION

PART VI -B

WATERBODY MANAGEMENT PLAN SERIES

Larto-Saline Complex

WATERBODY EVALUATION &
RECOMMENDATIONS

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED ANNUALLY

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TABLE OF CONTENTS

WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational

Sportfish species, primarily largemouth bass (LMB) and crappie, are managed to provide a sustainable population while providing anglers the opportunity to catch or harvest adequate numbers of fish to maintain angler interest and efforts.

Commercial

Commercial fishing is minimal in the Larto-Saline Complex. Water control measures over the past 40 years have altered water flow patterns and fisheries habitat in such a manner that the Larto-Saline Complex does not support high numbers of commercial species. A strategy directed specifically to the commercial fishery is not applied.

Species of Special Concern

No threatened or endangered fish species are known to inhabit this waterbody.

EXISTING HARVEST REGULATIONS

Recreational

This water body is managed under statewide regulations for all fish species. The Louisiana Department of Wildlife and Fisheries recreational fishing regulations may be viewed at the link below:
http://www.wlf.louisiana.gov/fishing/regulations

Commercial

The LDWF commercial fishing regulations may be viewed at the link below:
http://www.wlf.louisiana.gov/fishing/regulations

SPECIES EVALUATION

Recreational

Largemouth Bass

Largemouth bass populations are targeted for assessment because they are a species indicative of the overall health of the fish population due to their high position in the food chain. Electrofishing is the most efficient sampling method for collecting largemouth bass to evaluate abundance and size distribution.

Relative abundance and size structure indices

Electrofishing has been used to collect largemouth bass population data in the Larto-Saline Complex since the spring of 1992. In Figure 1, catch-per-unit-effort (CPUE) from spring electrofishing is used as an indicator of LMB relative abundance from 1992-2009. The average CPUE is relatively stable for the sampling period from 1992 through 2009. Observed variation is likely due to fluctuating water levels. The significant increase in CPUE observed in 2000 can likely be attributed to a drought that caused low water levels at the time of sampling. The low water level forced LMB to congregate in areas accessible to

electrofishing methods. Figure 2 indicates that trends in CPUE for all LMB size groups are relatively stable.

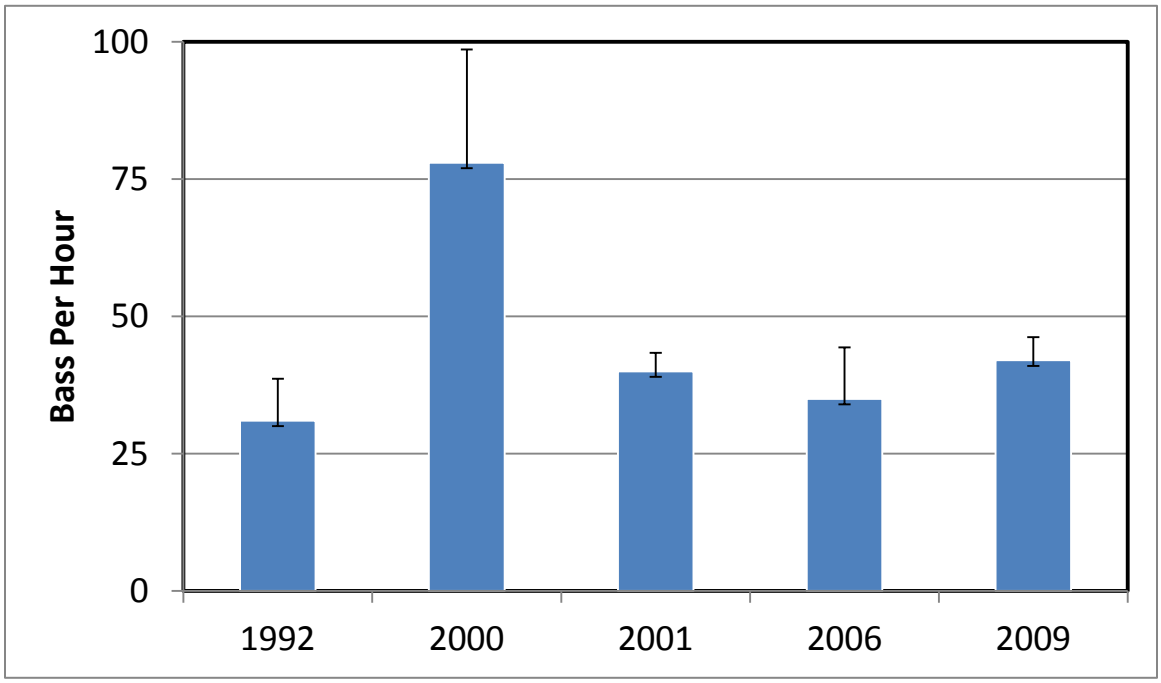

Figure 1. Average CPUE (± SE) for largemouth bass collected during spring electrofishing from Larto-Saline Complex, Louisiana from 1992 – 2009.

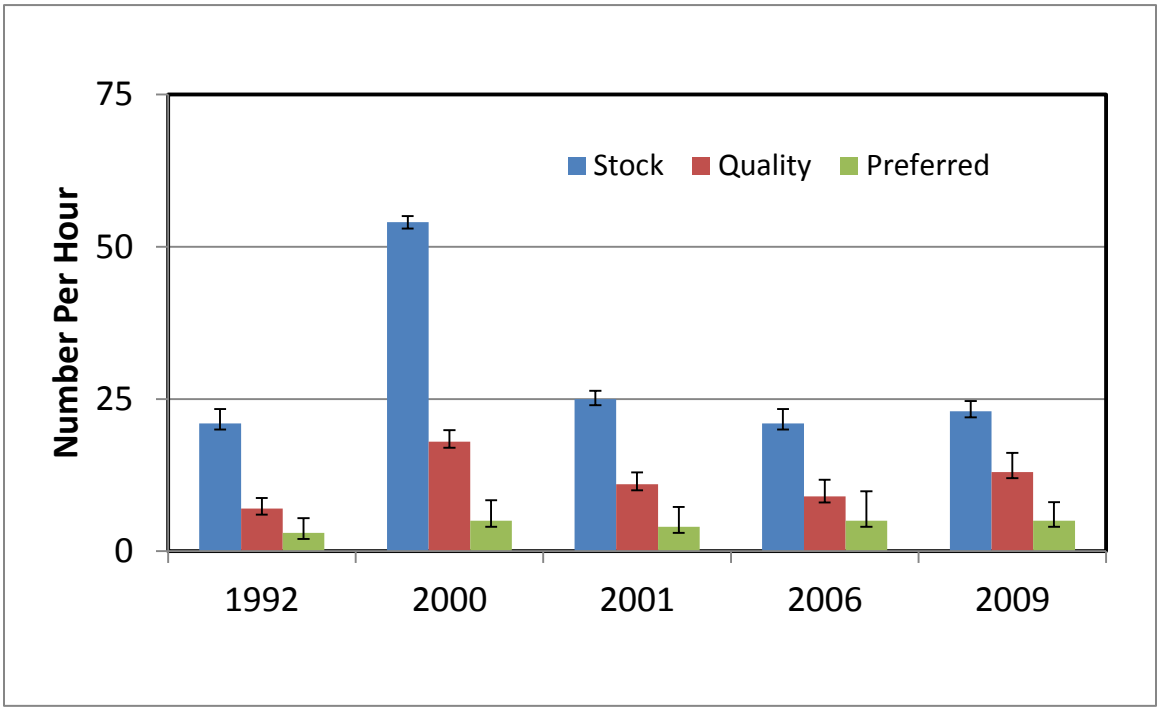

Figure 2. The average CPUE (± SE) for stock-, quality-, and preferred-size classes of largemouth bass collected from Larto-Saline Complex, Louisiana during spring electrofishing from 1992 – 2009.

Proportional stock density (PSD) and relative stock density (RSD) are indices used to numerically describe length-frequency data. Proportional stock density compares the number of fish of quality size (greater than 12 inches for largemouth bass) to the number of bass of stock size (8 inches in length). PSD is expressed as a percent. A fish population with a high PSD consists mainly of larger individuals, whereas a population with a low PSD consists mainly of smaller fish. For example, Figure 3 below indicates a PSD of 41 for 2006. The number indicates that 41% of the bass stock (fish over 8 inches) in the sample was at least 12 inches or longer. Individual lakes vary widely in their ability to support populations of bass. PSD values between 40 and 60 are considered to be satisfactory.

$$PSD = \frac{\text{Number of bass>12 inches}}{\text{Number of bass>8 inches}} \text{ x100}$$

Relative stock density (RSD) is the proportion of largemouth bass in a stock (fish over 8 inches) that are 15 inches or longer.

$$RSD = \frac{\text{Number of bass>15 inches}}{\text{Number of bass>8 inches}} \text{ x100}$$

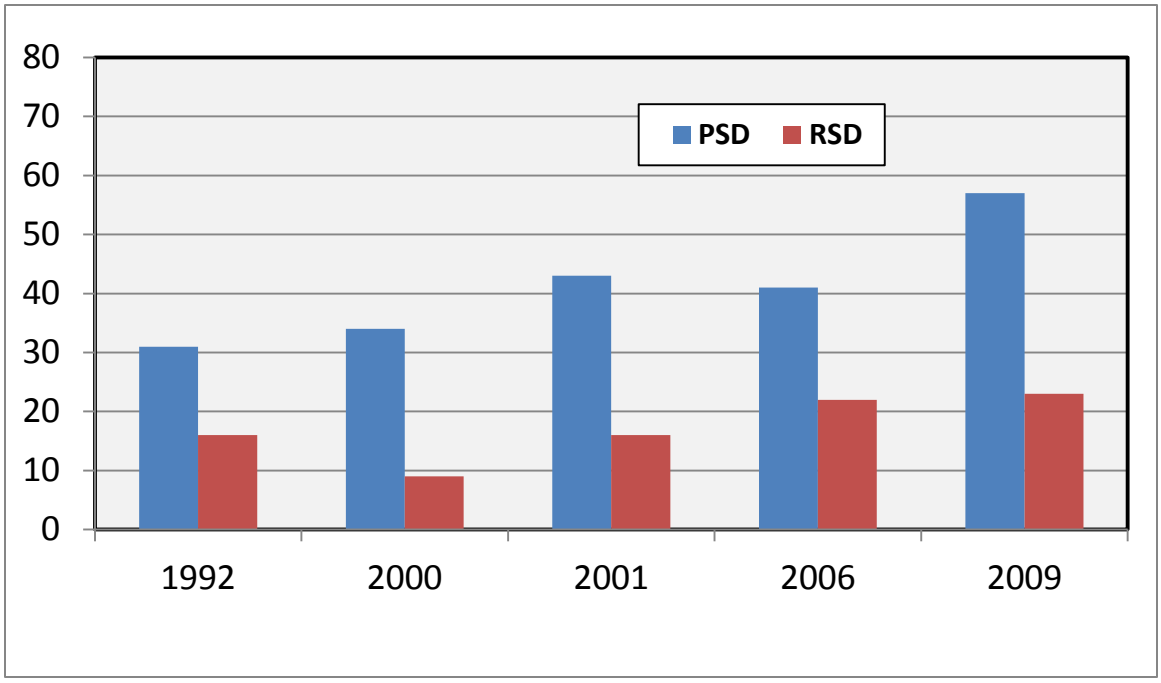

Figure 3. PSD and RSD-p for largemouth bass collected from Larto-Saline Complex, Louisiana during spring electrofishing from 1992 – 2009.

Trends in sampling data indicate PSD and RSD values have increased from 1992 through 2009. This is likely the result of an increased level of complex cover. Hydrilla became established in the lake in the early 2000's. Hydrilla coverage fluctuates depending on the influence of water level fluctuation. Submersed vegetation is present throughout the lake in shallow water areas.

Forage

Primary forage for largemouth bass in Larto-Saline Complex is shad and sunfish. Crawfish are plentiful due to the regular occurrences of back water flooding. Forage availability is measured by shoreline seine sampling (Figure 4) and by electrofishing sampling (Figure 5).

Forage availability is also measured indirectly through measurement of LMB body condition or relative weight. Relative weight (Wr) is the ratio of a fish's weight to the weight of a "standard" fish of the same length. The index is calculated by dividing the weight of a fish by the standard weight for its length, and multiplying the quotient by 100. Largemouth bass relative weights below 80 indicate a potential problem with forage availability. Information displayed in Figure 6 suggests the presence of sufficient forage each year. Relative weight values range from 83 to 108 from 1990- 2010.

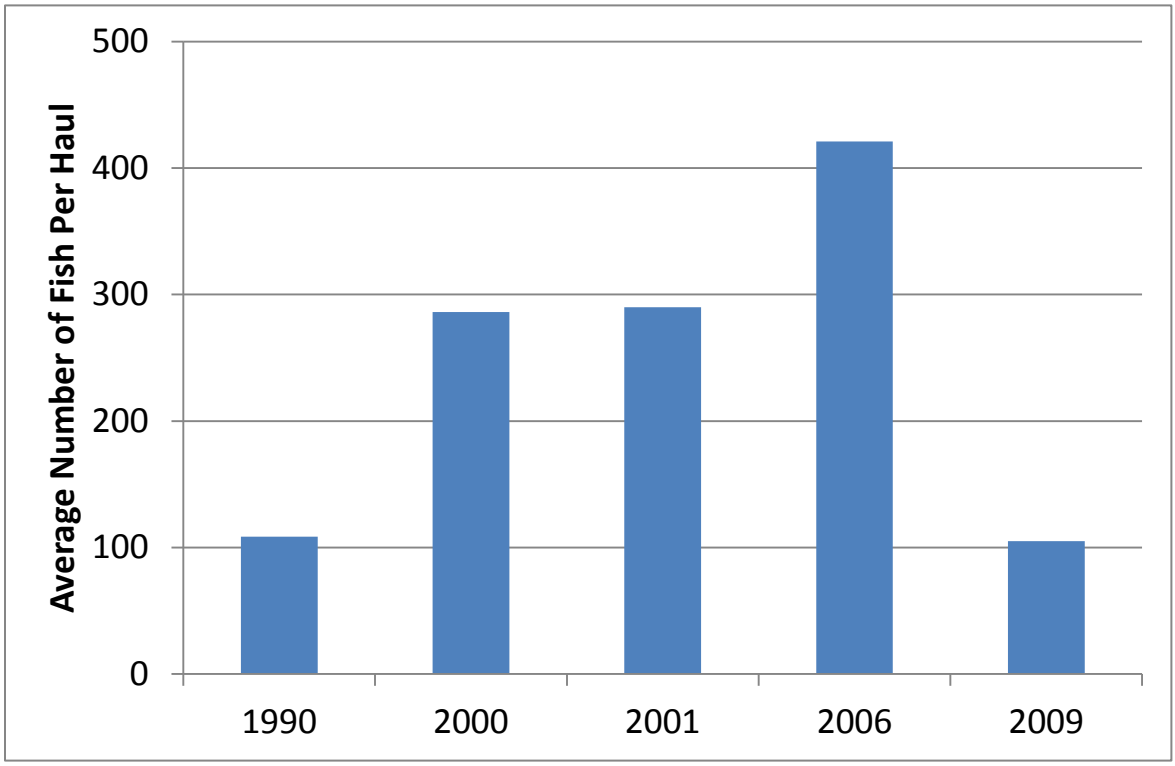

Figure 4. The CPUE (average number of fish per seine haul) of all species collected from shoreline seining for Larto-Saline Complex, LA, from 1990 – 2009.

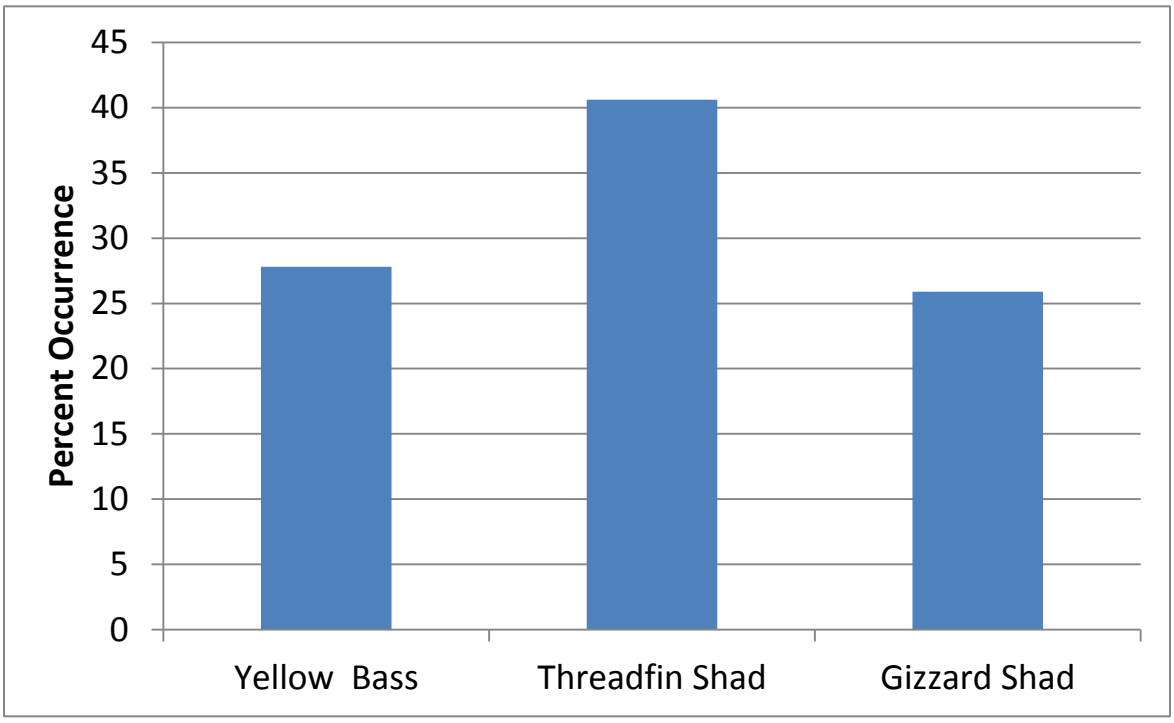

Figure 5. Percent frequency of forage species found in Larto-Saline Complex, Louisiana for 2006.

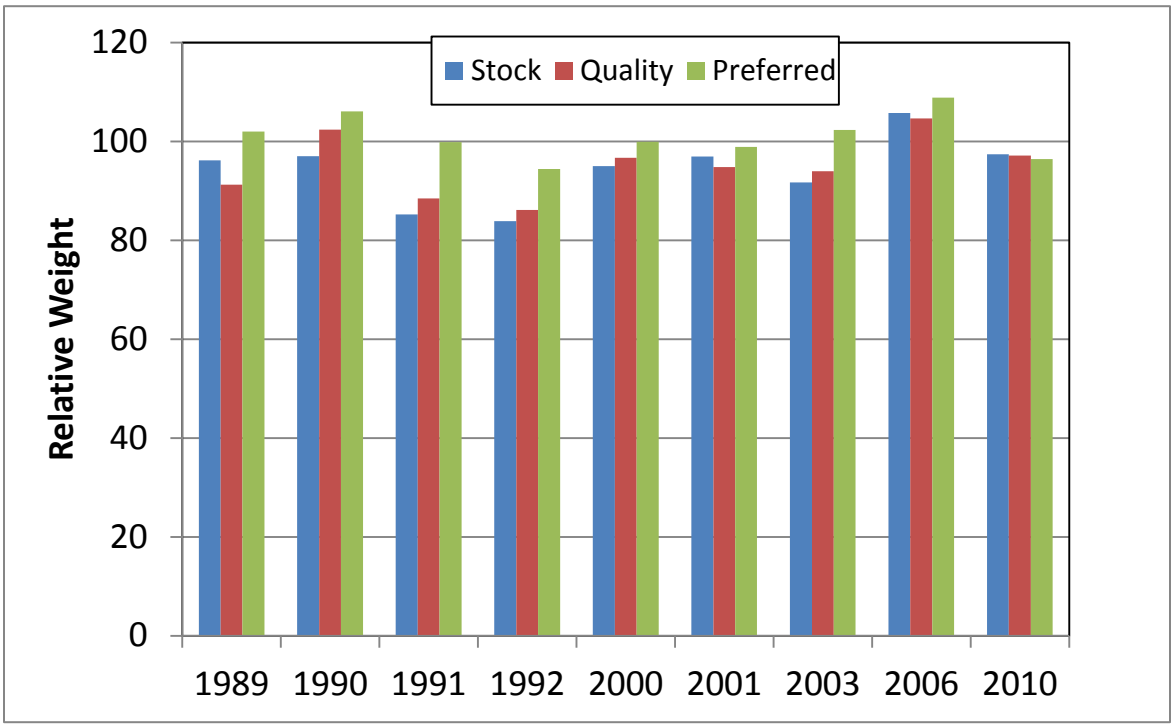

Figure 6. Relative weight values for stock, quality, and preferred-size classes of largemouth bass collected during fall electrofishing for Larto-Saline Complex, Louisiana from 1989 – 2010.

Largemouth Bass Age and Growth

Age and growth data were collected from 87 LMB in 1989-90 and 99 LMB in 2006. The results of these samples are listed in Table 1 below. Larto-Saline Complex bass growth rates are provided in Table 1. However, additional sampling is needed to determine growth and mortality rates.

Table 1. Largemouth bass growth rates in 1989-90 and 2006 for Larto-Saline Complex, Louisiana (n = 87 and 99, respectively).

AGE	Average Length (inches) 1989-1990 (N=87)	Average Length (inches) 2006 (N=99)
0	-	6.7
1	10.1	11.5
2	12.7	14.3
3	15.5	16.0
4	-	16.4
5	-	17.5
6	-	20.2

Largemouth bass genetics

Florida largemouth bass (FLMB) have not been introduced into the Larto-Saline Complex by LDWF. However, FLMB have been stocked extensively throughout Louisiana waterbodies. FLMB have been stocked into the Red River and the potential for their introduction does exist during high water events. In the fall of 2006, genetic testing was conducted and 12.1% of the bass had Florida alleles. See Table 2 for a complete summery of genetic testing.

Table 2. Largemouth bass genetic testing results from Larto-Saline Complex, Louisiana (n = 99).

Year	% Northern	% Florida	% Hybrid	% Florida Influence
2006	87.9 (n=87)	0	12.1 (n=12)	12.1

Crappie

Crappie fishing in the Larto-Saline Complex is considered to be outstanding. Both black and white crappies occur in the complex. The dynamic nature of crappie populations includes considerable variance over time. Levels of angler satisfaction are typically proportional to crappie population trends and therefore, also tend to be cyclic

Crappies were samples with electrofishing gear from 1999-2010. The sample catch rate was variable, ranging between 0 and 58 fish per hour (Figure 7). The technique of sampling crappie with lead nets has become a standardized sampling method for LDWF. Lead nets were effectively used to sample the crappie population from 2009 – 2012 (Figure 8). A crappie age, growth and mortality study was conducted in 2010, 2011, and 2012. Results will be included in the Larto-Saline Complex management plan when available.

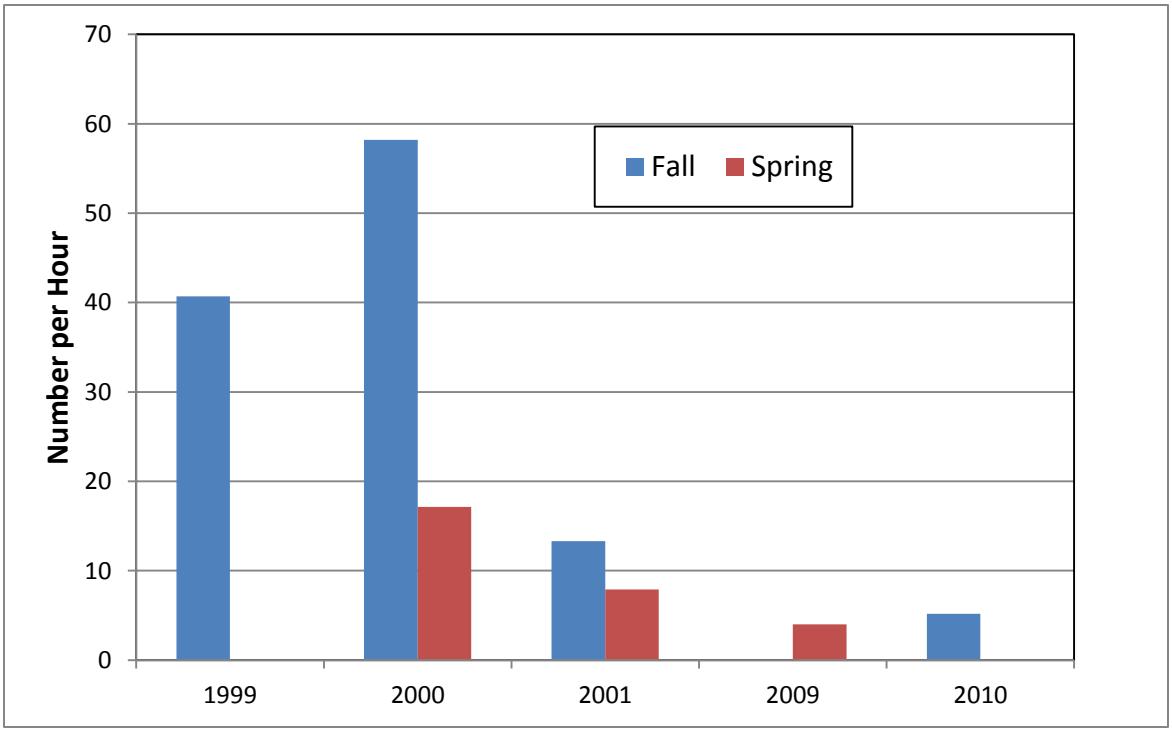

Figure 7. Average CPUE for crappie collected during spring and fall electrofishing from Larto-Saline Complex, Louisiana from 1999-2010.

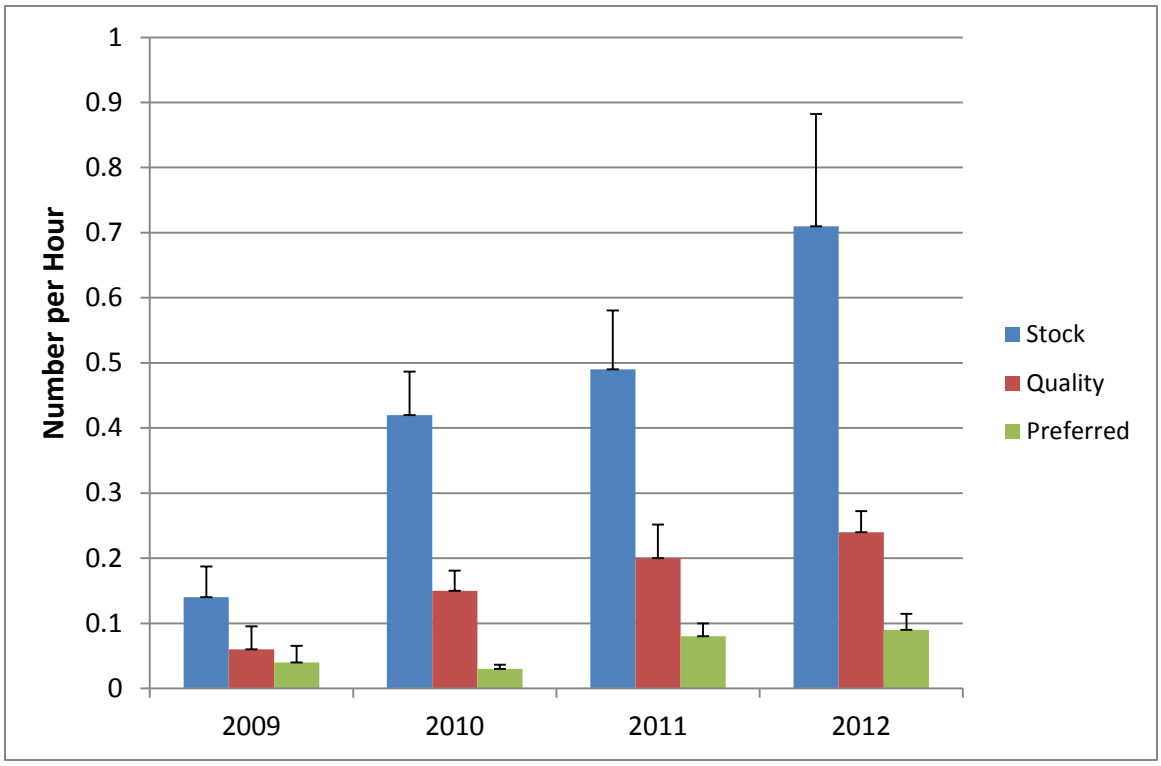

Figure 8. Average CPUE(± SE) for stock, quality, and preferred-size classes of crappie caught in lead nets from Larto-Saline Complex, Louisiana from 2009-2012.

Commercial

Large rough fish species that comprise a commercial fishery are not found in sufficient numbers to support a viable commercial fishery in the Larto-Saline Lake complex. However, periodic backwater flooding of the Black and Red Rivers creates habitat to support a wide variety of commercial species. Commercial harvest of these species is allowed in accordance with statewide regulations. Wire traps, jug lines, trotlines and rod and reel are used to catch commercial fish. Standardized biomass sampling (rotenone) conducted in 1998 showed the most abundant commercial fish to be channel catfish followed by freshwater drum.

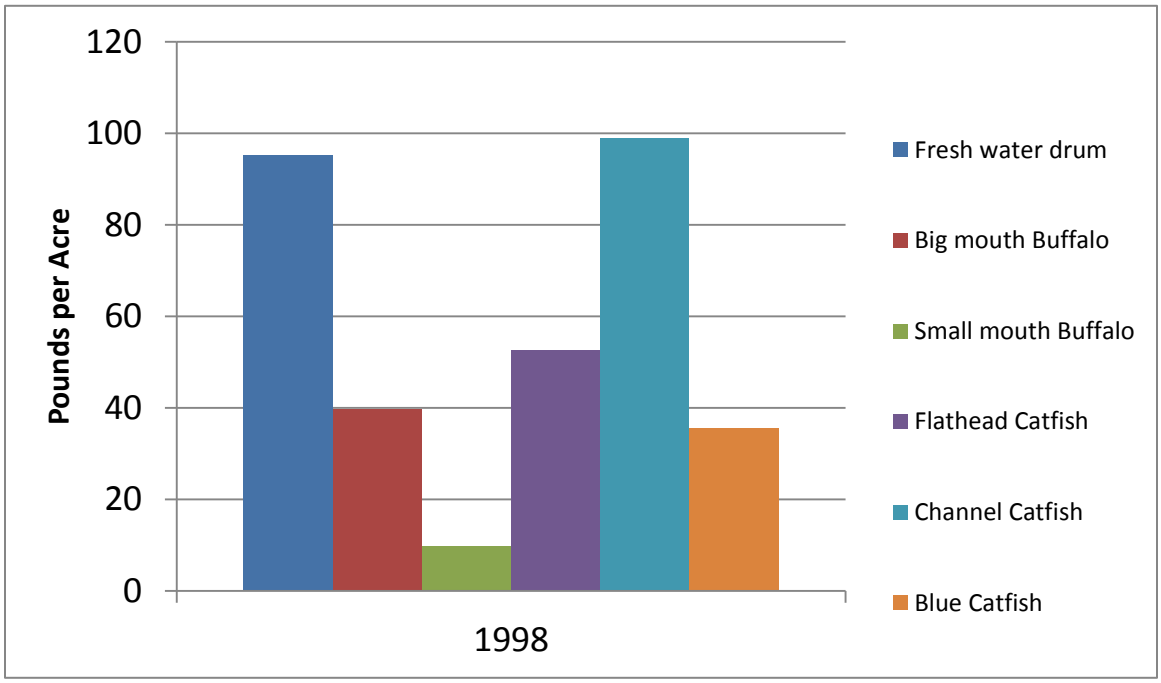

Figure 9. Biomass sampling results for commercial species for Larto-Saline Complex, Louisiana in 1998.

Creel Survey

Angler creel surveys were conducted on Larto-Saline Complex in 2000 and 2001 to gather data on recreational fishing efforts and harvest (Figure 10).

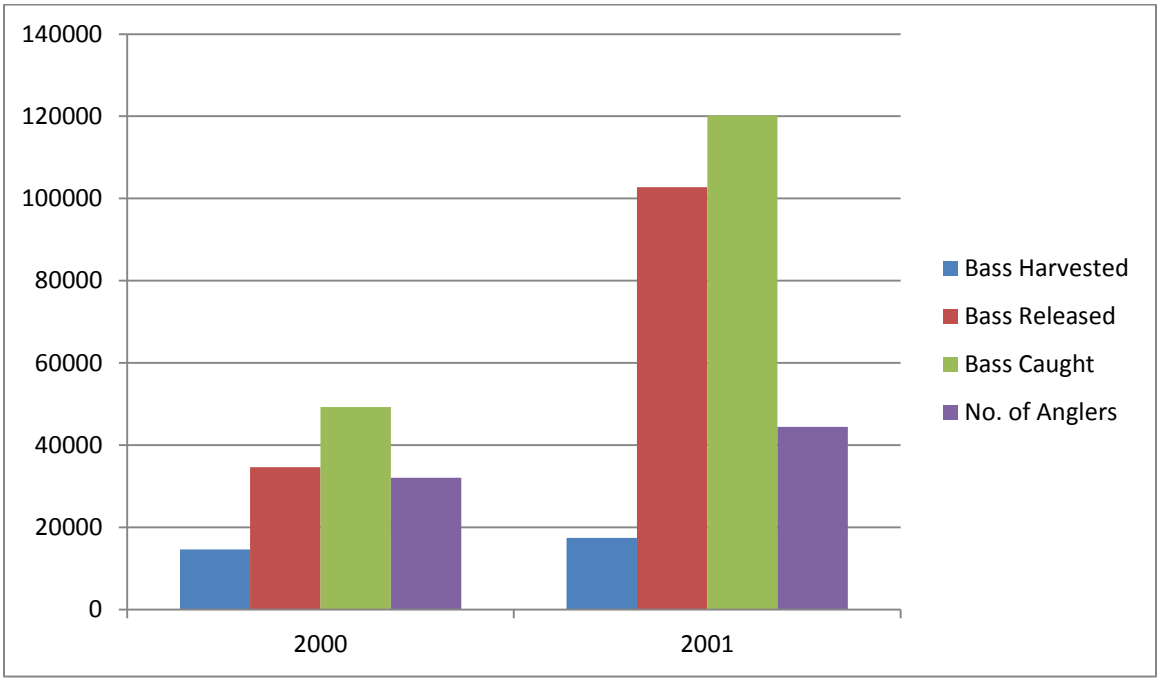

Figure 10. The largemouth bass harvest and angler effort collected during recreational creel surveys on Larto-Saline Complex, Louisiana in 2000 and 2001.

HABITAT EVALUATION

Aquatic Vegetation

The most prominent submersed vegetation in Larto-Saline Complex is hydrilla (*Hydrilla verticillata*). Additional species of submersed vegetation include Brazilian waterweed (*Egeria densa*), fanwort (*Cabomba caroliniana*), and coontail (*Ceratophyllum demersum*). A number of emergent species are present, including alligator weed (*Alternanthera philoxeroides*), American lotus (*Nelumbo lutea*), pennywort (*Hydrocotyle spp.*), primrose (*Ludwigia spp.*), and water hyacinth (*Eichhornia crassipes*). This vegetation is sporadic and scattered throughout the complex. Annual vegetation coverage fluctuates and is dependent upon the extent, timing and duration of backwater flooding. Hydrilla is prevalent on the fringes of bayous and is frequently very abundant around the Shad Lake area of the complex. Emergent vegetation is prevalent in the shallow water areas during the summer months. Large areas of American lotus are prevalent in the Shad Lake area. A large portion of the shoreline is lined with button bush (*Cephalanthus occidentalis*) and bald cypress trees (*Taxodium distichum*). At times, water hyacinth can expand to problematic coverage. It typically forms mats in the ends of bayous and cutoffs. Common salvinia becomes prevalent during late summer in some years. Giant salvinia was discovered on October 30, 2012 in the Open Bayou area. Giant salvinia plants covered an area of less than one acre. Treatments were immediately conducted and an intense survey of the immediate vicinity was conducted. No additional giant salvinia was located. LDWF spray crews treated the area repeatedly over the next few months and all floating and emergent vegetation in the vicinity that could have harbored salvinia was also sprayed. No additional giant salvinia has been discovered to date.

A vegetation survey was conducted on the Larto-Saline Lake complex on March 18, 2014. There were no vegetation issues at that time. Total coverage for emergent and

submersed vegetation combined was less than 100 acres. No late summer or fall vegetation survey was conducted. The lake water level was lowered for the construction of the Cross Bayou Weir. As of December 16, 2014 the Larto-Saline Lake complex water level remains approximately 3.5 feet low. Due to the extended period of drying no problem vegetation is expected in 2015.

The most recent type map available occurred on July 24th and 25th of 2013. It can be found in Appendix I.

Herbicide spraying is routinely conducted on Larto-Saline Complex for water hyacinth, American lotus, and salvinia control. However, adequate control is difficult in places due to shallow water areas and areas covered with button bush making some areas difficult to access with spray boats.

After the water control structure failures in 2008 of the Cross Bayou weir and Denny's drain, the hydrilla infestation was greatly reduced. It is slowly returning. Water level fluctuations due to the leaking Cross Bayou weir and the high water event in 2011 are recent significant influences. The Complex water level was reduced by approximately 4 feet in July 2014 to facilitate replacement of the Cross Bayou Weir. As of November 2014, the complex water level remains 3.5 feet below pool stage.

Substrate

The frequent water level fluctuation that occurs in the Larto-Saline Complex promotes increased decomposition of organic substrate composition. The process improves the suitability of the substrate for nesting sport fish species. The majority of the shoreline area is wooded. This creates good buffer zones and helps reduce sedimentation. Areas in close proximity to Red River backwater inflow have an accumulation of silt.

Artificial Structure

The physical characteristics of the Larto-Saline Complex include an abundance of complex cover including aquatic vegetation, standing trees, stumps, logs, and button bush. No additional complex cover is necessary.

CONDITION IMBALANCE / PROBLEM

Since construction of the Catahoula Lake Diversion Canal in 1972, there have been numerous failures of the spoil bank. Related consequences have included an uncontrolled hydrological connection between the Larto-Saline Complex and the diversion canal. Despite the recent replacement of the problematic Cross Bayou Weir, the potential for spoil bank failures at other locations will remain.

CORRECTIVE ACTION NEEDED

No corrective action is needed at this time.

RECOMMENDATIONS

1. Continue LDWF standardized sampling to assess fisheries populations.

2. LDWF spray crews will continue treating emergent and floating vegetation as needed with either glyphosate (0.75 gal/acre) or diquat (0.75 gal/acre) and an approved surfactant (0.25 gal/acre) in accordance with LDWF Aquatic Herbicide Application Procedures. A mixture of diquat (0.25 gal/acre) and glyphosate (0.75 gal/acre) with Aqua King Plus (0.25 gal/acre) and Air Cover (12 oz./acre) surfactants may be applied to common salvinia. Alligator weed will be controlled with imazapyr (0.5 gal/acre) in undeveloped areas and with imazamox (0.5 gal/acre) near houses and developed shorelines. Turbulence surfactant (0.25 gal/acre) will be used in conjunction with both of these herbicides.

3. Continue aquatic vegetation surveys each summer to determine species composition and area coverage.

APPENDIX I

Typemap

Larto-Saline Lake vegetation survey conducted on July 24th and 25th of 2013.